

REMARKS

Claims 1-67 remain in the application for consideration. In view of the following remarks amendments and/or remarks, Applicant respectfully requests that the application be forwarded onto issuance.

The Claim Rejections

Claims 1-7, 10, 13-18, 20, 23-28, 32-36, 45-55, 58-61, and 66 stand rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 6,401,051 to Merriam in view of U.S. Patent No. 5,539,922 to Wang.

Claims 8-9, 11-12, 19, 21-22, 29-31, 37-44, 56-57, 62-65 and 67 stand rejected under 35 U.S.C. §103(a) as being obvious over to Merriam in view of Wang and U.S. Patent No. 6,088,717 to Reed et al. (hereinafter "Reed").

Before undertaking a discussion of the substance of the Office's rejections, the following discussion of the §103 Standard, as well as the references to Merriam and Wang is provided.

The §103 Standard

In making out a §103 rejection, the Federal Circuit has stated that when one or more reference or source of prior art is required in establishing obviousness, "it is necessary to ascertain whether the prior art *teachings* would appear to be sufficient to one of ordinary skill in the art to suggest making the claimed substitutions or other modification." *In re Fine*, 5 USPQ 2d, 1596, 1598 (Fed. Cir. 1988). That is, to make out a prima facie case of obviousness, the references must be examined to ascertain whether the combined *teachings* render the claimed subject matter obvious. *In re Wood*, 202 USPQ 171, 174 (C.C.P.A. 1979).

1 Moreover, there is a requirement that there must be some reason,
2 suggestion, or motivation *from the prior art*, as a whole, for the person of ordinary
3 skill to have combined or modified the references. *See, In re Geiger*, 2 USPQ 2d
4 1276, 1278 (Fed. Cir. 1987). It is impermissible to use the claimed invention as an
5 instruction manual or “template” to piece together the teachings of the prior art so
6 that the claimed invention is rendered obvious. One cannot use hindsight
7 reconstruction to pick and choose among isolated disclosures in the prior art to
8 deprecate the claimed invention. *In re Fritch*, 23 USPQ 2d 1780, 1784 (Fed. Cir.
9 1992).

10 A factor cutting against a finding of motivation to combine or modify the
11 prior art is when the prior art *teaches away* from the claimed combination. A
12 reference is said to teach away when a person of ordinary skill, upon reading the
13 reference, would be led in a direction divergent from the path that the applicant
14 took. *In re Gurley*, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994).

15 In order for a prima facie case of obviousness to be made, the resulting
16 combination or motivation must appear to show or suggest the claimed invention.
17 *In re Nielson*, 2 USPQ 2d 1525, 1528 (Fed. Cir. 1987).

18 19 The Merriam Reference

20 Merriam discloses a method and apparatus for locating buried objects, such
21 as such as underground cables, prior to digging at a particular location. Merriam
22 instructs that a positioning device is taken to the location where digging is to take
23 place and receives positioning signals from one or more positioning stations.
24 Based upon the positioning signals, the positioning device determines its current
25 location and hence the location of the dig site. Once the current location is

1 determined, a registry database containing the locations of previously buried
2 objects is accessed. The registry database is queried for all locations within a
3 selected distance of the current location which have buried objects. If this query
4 returns no records, then Merriam instructs that it is probably safe to dig at the
5 current location. On the other hand, if the query returns one or more locations,
6 then Merriam instructs that further digging at the current location should either be
7 avoided or performed with great caution.

8 Merriam's Fig. 1 provides an illustration of its system, generally at 100.
9 There, system 100 comprises one or more positioning devices 102, a central
10 computer 104, and one or more positioning stations 106. Merriam instructs that
11 the positioning device 102 is the component that is taken to a dig site and that its
12 responsibility is to determine its own current location, and hence the current
13 location of the dig site. This determination is made based upon positioning signals
14 provided to the positioning device 102 by the positioning stations 106. Once the
15 current location is determined, the central computer 104 is consulted, via a
16 communications link 108, to determine whether there are any buried objects at or
17 near the current location. The central computer 104, which maintains a registry
18 database 110 of locations at which objects have been previously buried, makes this
19 determination by searching the database 110 for all locations within a certain
20 distance of the current location. Thereafter, the central computer 104 provides to
21 the positioning device 102, via the communications link 108, all of the locations
22 retrieved from the database 110. Based upon the location information received
23 from the central computer 104, the positioning device 102 provides to a user an
24 indication as to whether there are buried objects within relative close proximity to
25

1 the current location. This indication allows the user to determine whether he
2 should or should not dig at the current location.

3 4 The Wang Reference

5 Wang discloses communication systems for portable transceivers and
6 methods and systems that trace the locations of portable transceivers.

7 Perhaps a good place to start a discussion of Wang is with its Fig. 1. There,
8 Wang shows a hierarchical structure for a communication system 100. Wang
9 instructs that covered area of the communication system 100 is organized into a
10 hierarchical structure having several layers. The highest layer may be the earth
11 102 followed by country 104, state 106, area code 108, city 110, and the lowest
12 layer (Layer 1) is a primary layer that comprises a plurality of independent paging
13 regions (cells) 112. According to Wang, each region defines an area or location in
14 which one may be paged. Each layer 1 cell comprises one or more base stations.
15 Layer 1 may comprise a radio telephone communication system (e.g., Digital
16 European Cordless Telephone).

17 As Wang instructs, each block in layers 2 through 6 (the secondary layers)
18 is a communication service node representing a *switching station having*
19 *computing and memory means* (i.e., all layers >1 are intelligent layers). The
20 memory means (at each of the switching stations) comprises a database for
21 tracking the location of customers (i.e., users of portable communication units that
22 are registered in the system). Thus, what begins to emerge from a preliminary
23 overview of Wang is a system in which transceivers are tracked by a number of
24 geographically-separated switching stations, each with computing and memory
25 means which includes a database to track customer locations.

1 The operation of Wang's system is probably best appreciated from its Fig.
2 5. There, Wang shows a diagram illustrating an example of how a customer or
3 transceiver is traced via an address chain. In this example, an entity known as a
4 "called party" (unit 24) has a home address in cell 1,d, and a current address at cell
5 8,d. In a first case, the communication unit 20, located in cell 2,c, places a call to
6 communication unit 24. To do this, Wang instructs that the communication unit
7 20 dials the home address number of the called party. The calling party's
8 connection request is received by a base station at cell 2,c, and it is passed on to
9 the Boynton node in layer 2. That is, the connection request is passed on to a
10 different switching station with its own computing and memory means, as noted
11 above.

12 At the Boynton node, the corresponding database is searched for an entry
13 pertaining to the called party. In this case an entry is found in the database. The
14 entry contains the home address (HA) of the called party and an "OUT" indication
15 which indicates that the transceiver is outside of the covered region associated
16 with the Boynton node. This being the case, the call is then forwarded along the
17 address chain to the "407" node of layer 3, where the corresponding database also
18 contains the home address of the called party and an "OUT" indication which
19 indicates that the transceiver is outside of the covered region associated with the
20 "407" node. Thus, the connection request is further traced up through the Florida
21 node of layer 4, also indicating that the called party is "OUT". Then, in the U.S.A.
22 node of layer 5, with its associated computing and memory means (i.e. database),
23 indicates that the portable device 24 is in Georgia. The tracing then continues to
24 the Georgia node, where the area code "404" is indicated. Thereafter, the tracing
25 process continues to the "404" node, where "Atlanta" is indicated. Searching in

1 the Atlanta database reveals the location of the portable communication unit 24,
2 and the requested connection is made.

3 With respect to updating and maintaining all of the databases, Wang
4 instructs as follows. The database updating process is initiated by the portable
5 communication units. Each base station continuously transmits its subsystem
6 identification information. By monitoring this information from the surrounding
7 bases, an active portable communication unit is able to select a desired base station
8 (e.g., the strongest base) and lock on to it. Whenever a new strongest base station
9 is found, up to two messages may be transmitted to the associated bases to update
10 the address chains. The address of the base to which the portable communication
11 unit is locking is called the current address and the address of the base of the new
12 strongest base is called the new address.

13 14 **The Claims**

15 **Claim 1** recites a computing device comprising:

- 16
- 17 • one or more processors;
 - 18 • memory operably associated with the one or more processors; and
 - 19 • a context service module loadable in the memory and executable by
20 the one or more processors to receive context information from one
21 or more context providers and process the information to determine
22 a current device context by determining, from the context
23 information, at least one node associated with the context
24 information and traversing at least a portion of a hierarchical tree
25 structure of which said at least one node comprises a part.

23 In making out the rejection of this claim, the Office argues that Merriam
24 discloses all recited features except for traversing a hierarchical tree structure of
25

1 which the recited node comprises a part. More specifically, the Office argues that
2 Merriam's dig site constitutes a "node" as that term is used in the claim. The
3 Office then relies on Wang and argues that Wang discloses a communication
4 system with a hierarchical system of nodes organized into nodes trees. The Office
5 notes that Wang's hierarchical system is capable of tracking the location of a
6 transceiver as it moves between nodes of the tree structure.

7 Given these two references, the Office argues that their combination would
8 render the subject matter of this claim obvious. In support of its argument, the
9 Office argues that the skilled artisan would have readily recognized the
10 desirability and advantage of modifying Merriam by employing the system of
11 Wang in order to provide a method of linking root nodes of various trees and for
12 the advantage of efficiently tracking a device location in a hierarchical system.

13 Applicant respectfully disagrees with the Office's combination and its
14 stated motivation to combine these references. As such, Applicant respectfully
15 submits that the Office has failed to establish a *prima facie* case of obviousness.

16 Consider, for example, the nature of Merriam's disclosure. Specifically,
17 Merriam teaches a system that utilizes a positioning device to receive positioning
18 signals so that the positioning device can determine its location. Once its location
19 is determined, the positioning device can ascertain whether it is safe to dig at the
20 particular location. Once this determination is made, the positioning device is
21 done and its user can conceivably move on to another location. The Office argues
22 that it would be obvious to employ Wang's hierarchical system in Merriam's
23 system to efficiently track Merriam's device.

24 Applicant respectfully submits that Merriam's system and method have no
25 need whatsoever for tracking its positioning device. That is, Merriam's

1 positioning device determines its current location and whether it is safe to dig at
2 that current location. When Merriam's positioning device is moved to a next
3 location, it is of no consequence whatsoever where the positioning device has been
4 in the past. The only thing that is of any consequence with respect to the next
5 location, is whether it is safe to dig at that next location. Accordingly, the
6 motivation to combine these references, i.e. to track Merriam's device, is
7 misplaced at best. As such, the Office has failed to establish a *prima facie* case of
8 obviousness and this claim is allowable.

9 **Claims 2-12** depend from claim 1 and are allowable as depending from an
10 allowable base claim. These claims are also allowable for their own recited
11 features which, in combination with those recited in claim 1, are neither disclosed
12 nor suggested in the references of record, either singly or in combination with one
13 another. In addition, given the allowability of these claims, the rejection of claims
14 8, 9, 11 and 12 over the further combination with Reed is not seen to add anything
15 of significance.

16 **Claim 13** recites a computing device comprising:

- 17
- 18 • one or more processors;
- 19 • memory operably associated with the one or more processors; and
- 20 • a location service module loadable in the memory and executable by
- 21 the one or more processors to receive location information from one
- 22 or more location providers and process the information to determine
- 23 a current device location by determining, from the location
- 24 information, at least one node associated with the location
- 25 information and traversing at least a portion of a hierarchical tree
- structure of which said at least one node comprises a part.

1 In making out the rejection of this claim, the Office uses the same argument
2 and reasoning as it did in making out the rejection of claim 1 over Merriam and
3 Wang. As noted above, the Office has failed to establish a *prima facie* case of
4 obviousness because these references are not properly combinable. As such, this
5 claim is allowable.

6 **Claims 14-22** depend from claim 13 and are allowable as depending from
7 an allowable base claim. These claims are also allowable for their own recited
8 features which, in combination with those recited in claim 13, are neither disclosed
9 nor suggested in the references of record, either singly or in combination with one
10 another. In addition, given the allowability of these claims, the rejection of claims
11 19, 21 and 22 over the combination with Reed is not seen to add anything of
12 significance.

13 **Claim 23** recites a computing device comprising:

- 14 • one or more processors;
- 15 • one or more computer-readable media;
- 16 • *at least one hierarchical tree structure resident on the media and*
17 *comprising multiple nodes each of which represents a geographical*
18 *division of the Earth; and*
- 19 • a location service module loadable in the memory and executable by
20 the one or more processors to receive location information from one
21 or more location providers and *process the information to determine*
22 *a current device location that comprises a node of the hierarchical*
23 *tree structure.*

24 In making out the rejection of this claim, the Office uses the same argument
25 and reasoning as it did in making out the rejection of claim 1 over Merriam and
Wang. As noted above, the Office has failed to establish a *prima facie* case of

1 obviousness because these references are not properly combinable. As such, this
2 claim is allowable.

3 **Claims 24-31** depend from claim 23 and are allowable as depending from
4 an allowable base claim. These claims are also allowable for their own recited
5 features which, in combination with those recited in claim 23, are neither disclosed
6 nor suggested in the references of record, either singly or in combination with one
7 another. Given the allowability of claim 23, the rejection of claims 29-31 over the
8 further combination with Reed is not seen to add anything of significance.

9 **Claim 32** recites a computing device comprising:

- 10 • one or more processors;
- 11 • one or more computer-readable media;
- 12 • *at least one hierarchical tree structure resident on the media and*
13 *comprising multiple nodes each of which represents a physical or*
14 *logical entity; and*
- 15 • a location service module loadable in the memory and executable by
16 the one or more processors *to receive location information from one*
or more location providers and process the information to determine
a current device location that comprises a node of the hierarchical
tree structure.

17
18 In making out the rejection of this claim, the Office uses the same argument
19 and reasoning as it did in making out the rejection of claim 1 over Merriam and
20 Wang. As noted above, the Office has failed to establish a *prima facie* case of
21 obviousness because these references are not properly combinable. As such, this
22 claim is allowable.

23 **Claims 33-36** depend from claim 32 and are allowable as depending from
24 an allowable base claim. These claims are also allowable for their own recited
25 features which, in combination with those recited in claim 32, are neither disclosed

1 nor suggested in the references of record, either singly or in combination with one
2 another.

3 **Claim 37** recites a location-aware computing system comprising:

- 4
- 5 • one or more computing devices;
- 6 • each computing device having a software architecture comprising:
 - 7 ○ a location provider interface that is configured to receive location information;
 - 8 ○ a location service module communicatively associated with the location provider interface and configured to receive the location information from the multiple different location providers and process the information to ascertain a current device location by determining, from the location information, at least one node associated with the location information and traversing at least a portion of a hierarchical tree structure of which said at least one node comprises a part; and
 - 9 ○ one or more application program interfaces (API) or events associated with the location service module and defining a mechanism through which information concerning a current device location can be provided to one or more applications that are configured to provide location-specific services.
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16 In making out the rejection of this claim, the Office uses the same argument
17 and reasoning as it did in making out the rejection of claim 1 over Merriam and
18 Wang. As noted above, the Office has failed to establish a *prima facie* case of
19 obviousness because these references are not properly combinable. As such, this
20 claim is allowable. Given the allowability of this claim, the rejection over the
21 combination with Reed is not seen to add anything of significance. Accordingly,
22 for at least this reason, this claim is allowable.

23 **Claims 38-44** depend from claim 37 and are allowable as depending from
24 an allowable base claim. These claims are also allowable for their own recited
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1 features which, in combination with those recited in claim 37, are neither disclosed
2 nor suggested in the references of record, either singly or in combination with one
3 another.

4 **Claim 45** recites a computer-implemented method of determining a
5 computing device context comprising:

- 6
- 7 • receiving, with a computing device, information that pertains to a
current context of the device;
- 8 • processing the information on and with the device to ascertain the
9 current context of the computing device by determining, from the
10 information, at least one node associated with the information and
traversing at least a portion of a hierarchical tree structure of which
said at least one node comprises a part.
- 11

12 In making out the rejection of this claim, the Office uses the same argument
13 and reasoning as it did in making out the rejection of claim 1 over Merriam and
14 Wang. As noted above, the Office has failed to establish a *prima facie* case of
15 obviousness because these references are not properly combinable. As such, this
16 claim is allowable.

17 **Claims 46-57** depend from claim 45 and are allowable as depending from
18 an allowable base claim. These claims are also allowable for their own recited
19 features which, in combination with those recited in claim 45, are neither disclosed
20 nor suggested in the references of record, either singly or in combination with one
21 another. Accordingly, for at least this reason, this claim is allowable. Given the
22 allowability of this claim, the rejection of claims 56 and 57 over the combination
23 with Reed is not seen to add anything of significance.

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1 **Claim 58** recites one or more computer-readable media having computer-
2 readable instructions thereon which, when executed by a computing device, cause
3 the computing device to:

- 4 • receive information that pertains to a current location of the device,
5 the information being received from multiple different location
6 providers; and
- 7 • process the information to map the information to a node of a
8 hierarchical tree structure that comprises multiple nodes that
9 represent either (1) geographical divisions of the Earth or (2)
10 physical or logical entities; and
- 11 • traverse the hierarchical tree structure to ascertain the current device
12 location.

13 In making out the rejection of this claim, the Office uses the same argument
14 and reasoning as it did in making out the rejection of claim 1 over Merriam and
15 Wang. As noted above, the Office has failed to establish a *prima facie* case of
16 obviousness because these references are not properly combinable. As such, this
17 claim is allowable.

18 **Claim 59** recites a computer-implemented method of determining the
19 location of a hand-held, mobile computing device comprising:

- 20 • maintaining a hierarchical tree structure on the mobile computing
21 device, the tree structure comprising multiple nodes each of which
22 represent geographical divisions of the Earth;
- 23 • receiving information from multiple different location providers that
24 describe aspects of a current device location;
- 25 • processing the information with the mobile device to ascertain a
26 node on the tree structure that likely constitutes a current device
27 location; and
28 traversing at least one other node of the tree structure to ascertain
29 additional location information that is associated with the current
30 device location.

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2 In making out the rejection of this claim, the Office uses the same argument
3 and reasoning as it did in making out the rejection of claim 1 over Merriam and
4 Wang. As noted above, the Office has failed to establish a *prima facie* case of
5 obviousness because these references are not properly combinable. As such, this
6 claim is allowable.

7 **Claims 60-66** depend from claim 59 and are allowable as depending from
8 an allowable base claim. These claims are also allowable for their own recited
9 features which, in combination with those recited in claim 59, are neither disclosed
10 nor suggested in the references of record, either singly or in combination with one
11 another. In addition, given the allowability of this claim, the rejection of claims
12 62-65 over the combination with Reed is not seen to add anything of significance.

13 **Claim 67** recites one or more computer-readable media having computer-
14 readable instructions thereon which, when executed by a computing device, cause
15 the computing device to:

- 16
- 17 • maintain or access a hierarchical tree structure on or with the
18 computing device, the tree structure comprising multiple nodes each
19 of which represent geographical divisions of the Earth;
 - 20 • receive information from multiple different location providers that
21 describe aspects of a current device location;
 - 22 • process the information with the device to ascertain a node on the
23 tree structure that likely constitutes a current device location;
 - 24 • traverse at least one other node of the tree structure to ascertain
25 additional location information that is associated with the current
device location;
 - receive one or more calls from one or more applications for
information that pertains to a current device location, the
applications being configured to render location-specific
information; and

1 supply at least some information that pertains to the current device
2 location to the one or more applications.

3 In making out the rejection of this claim, the Office uses the same argument
4 and reasoning as it did in making out the rejection of claim 1 over Merriam and
5 Wang. As noted above, the Office has failed to establish a *prima facie* case of
6 obviousness because these references are not properly combinable. As such, this
7 claim is allowable.

8
9 **Conclusion**

10 All of the claims are in condition for allowance. Accordingly, Applicant
11 requests a Notice of Allowability be issued forthwith. If the Office's next
12 anticipated action is to be anything other than issuance of a Notice of Allowability,
13 Applicant respectfully requests a telephone call for the purpose of scheduling an
14 interview.

15 Respectfully Submitted,

16
17 Dated: 5/3/04

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